



## STUDENT ACTIVATION

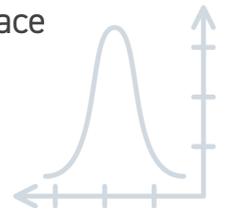


# Mechanical Engineer



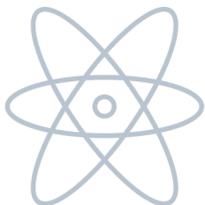
## OVERVIEW

Mechanical engineers create products and services that solve complex problems. They are creative and analytical and are interested in making a difference in their communities and the world. They ask questions, design and develop solutions, and then test those solutions. They create a very wide range of solutions to problems like world hunger, transportation, energy efficiency, space exploration, and much more. At Boeing, a mechanical engineer might get to work on innovations like the International Space Station, NASA's Space Launch System, the Starliner next-generation space capsule, and the NASA docking system!



## EVALUATE YOUR INTEREST

- I ask a lot of questions, especially big ones that don't have obvious answers.
- I like to understand how things work—everything from how a simple machine functions to how the human body heals itself.
- I enjoy solving problems, and I like to think about some of the world's biggest problems that have yet to be solved.
- I want to help humankind.
- I am interested in STEM subjects like algebra, physics, calculus, and computer science.
- I am a strong communicator and enjoy working with others.



# Mechanical Engineer

STUDENT ACTIVATION (CONTINUED)



## CAREER CONNECTION

<b>How does this career affect me?</b>	<b>What are some other similar careers?</b>	<b>How does this career affect the world?</b> 
<p>If you've ever ridden in a car, on a bus, or in a plane, you've benefitted from the work of mechanical engineers. The whole transportation industry is driven by mechanical engineers, who are concerned with creating and improving modes of transportation that are safe, reliable, and economical. In addition to enabling the basic parts that make transportation possible, from wheels and axels to gas engines, mechanical engineering is also responsible for innovations that ensure cars have advanced safety features, that buses can be environmentally friendly or even "zero emission" vehicles, and that planes can fly halfway around the world before they have to refuel.</p>	<p><b>Nuclear engineers</b> are concerned with the design and development of instruments and systems used to harness nuclear energy and radiation. They often work in the energy and medical fields, where there have been great innovations in the use of radioactive materials.</p> <p><b>Civil engineers</b> plan and implement public works projects like bridges, roads, and waterways. Their work enables people and commerce to move around the country with ease and at speed.</p> <p><b>Industrial engineers</b> innovate ways to produce goods and materials more efficiently. They are concerned with eliminating wastefulness and inefficiency in production processes, including the use of machines and even workers.</p>	<p>Mechanical engineers are responsible for designing and creating innumerable medical devices that have changed healthcare as we know it. Some of the life-saving devices that are used most often, devices like the pacemaker and artificial heart valves, mimic the way that the human body functions, enabling people to live longer and fuller lives than they would have otherwise. Devices like the stethoscope, X-ray machine, and the magnetic resonance imager (MRI) allow doctors to monitor and better understand the body's functions. These devices have stood the test of time, but new medical innovations are being designed and created by mechanical engineers every day.</p>

## TAKE ACTION

- Perform an audit of all the machines and devices in your home or school that were designed and created by a mechanical engineer. These could be anything from electronics to simple machines, like tools that work on a pulley system or use a crank. Record all of the examples you can find and share your results with your family.
- Think of a chore that you don't enjoy doing and brainstorm ways that a tool or machine could help make that task quicker and easier. What would the machine need to do? How do you think it would work? Follow the engineering design process to identify the need, research the issue, brainstorm ideas, develop a solution prototype, test and evaluate your design, and then improve upon it. Share your design and results with your classmates.
- Identify a device that has recently brought a new type of technology to the world, such as one of the "smart" home devices (personal assistants, smart speakers, etc.) that are becoming so popular. Make a list of the benefits of that technology to the people who use it and to society at large. Then, make a second list of the potential ethical concerns raised by that device and the technology. Can you think of ways that the risks or concerns could be mitigated? Discuss the list with a friend or family member and decide whether you think the rewards of the device outweigh the risks.